CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2013 series

0580 MATHEMATICS

0580/21 Paper 2 (Extended), maximum raw mark 70

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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Cambridge is publishing the mark schemes for the October/November 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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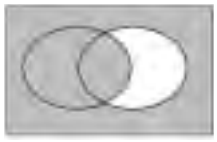
Abbreviations

cao correct answer only
cso correct solution only
dep dependent
ft follow through after error
isw ignore subsequent working
oe or equivalent
SC Special Case
www without wrong working

Qu.	Answers	Mark	Part Marks
1	86.7 or 86.74 to 86.75	**1**	
2	5.293 cao	**2**	**B1** for 5.29 or 5.292 to 5.2927
3	125	**2**	**B1** for 55 or 125 in any other correct position on diagram or **M1** for 180–55
4	7.7	**2**	**M1** for $44 \times \frac{17.5}{100}$ oe
5	4.8 oe	**2**	**M1** for $5 + 19 = 3x + 2x$ oe or better or **B1** for $24 - 2x = 3x$ oe or $5 = 5x - 19$ oe
6	**(a)** $\frac{2}{6}$ oe **(b)** 200	**1** **1FT**	 FT 600 × *their* **(a)** providing *their* **(a)** is a probability
7	435, 445 cao	**2**	**B1** for one value in the correct place or **SC1** for both values correct but reversed
8	134	**3**	**M2** for $\frac{20.1 \times 100}{3 \times 5}$ oe or **M1** for $\frac{x \times 3 \times 5}{100} = 20.1$ or 3% = 4.02 oe If 0 scored **SC1** for answer of figs 134
9	**(a)** $\frac{n}{n+2}$ oe final answer **(b)** n^2-1 oe final answer	**1** **2**	 **B1** for any quadratic in final answer
10	$[\pm]\sqrt{c^2 - a^2}$ oe final answer	**3**	**M1** for correct square **M1** for correct re-arrangement **M1** for correct square root

11	150	**3**	**M1** for m^3 to cm^3 or cm^3 to m^3
12	**(a)** 110	**1**	
	(b) 79	**2**	**B1** for $DAC = 42$ or $ACB = 79$ or $ACD = 28$
13	**(a)** $\frac{5}{4}$ oe	**1**	
	(b) $4y^6$	**2**	B1 for ky^6 or y^6 or $4y^k$ or 4 as final answer
14	$\frac{2t-5}{t-1}$ final answer	**3**	**B1** for $\frac{3(t-1)}{t-1}$ or better **B1** for $3(t-1)-(t+2)$ oe or better
15	**(a)** $\frac{9}{12}-\frac{1}{12}$ oe	**M1**	Must be shown
	$[=]\frac{8}{12}$ oe $[=]\frac{2}{3}$	**M1**	Both fractions must be shown
	(b) $\frac{5}{2}\times\frac{4}{25}$ oe	**M1**	Must be shown
	Cancelling shown or $\frac{20}{50}$ oe $[=]\frac{2}{5}$	**M1**	**Dependent** and cancelling shown or a fraction and then $\frac{2}{5}$ must be shown
16	**(a)** $\begin{pmatrix}9\\6\end{pmatrix}$	**1**	
	(b) 10.8 or 10.81 to 10.82	**2FT**	**M1** for $\sqrt{(their\ 9)^2+(their\ 6)^2}$ **A1** for 10.8 or FT correctly evaluated
	(c) (17, 13)	**1FT**	FT *their* 9 and 6. (8 + *their* 9, 7 + *their* 6) correctly evaluated
17	**(a)** $(a+b)(1+t)$	**2**	**B1** for 1(a + b) + t(a + b) or $a(1+t)+b(1+t)$
	(b) $(x-6)(x+4)$	**2**	**SC1** for answer of $(x+a)(x+b)$ where $ab = -24$ or $a+b=-2$
18	486 cao	**4**	**M1** for $\frac{1}{2}\times 4\pi r^2+\pi r^2=243\pi$ or better **A1** for $[r=]$ 9 **M1** for $\frac{1}{2}\times\frac{4}{3}[\pi](\text{their } r)^3$

19	**(a)** 40	**2**	**M1** for $\frac{144\times1000}{60\times60}$ oe
	(b) 3.5	**2FT**	FT 140 ÷ *their* **(a)** **M1** for dist ÷ *their* **(a)** or dist ÷ 40 or dist × $\frac{60\times60}{144\times1000}$ or **B1** for 140 seen
20	**(a) (i)** Accurate bisector of angle *B* with correct arcs	**2**	**B1** for correct line or correct arcs
	(ii) Accurate perpendicular bisector of *BC* with correct arcs	**2**	**B1** for correct line or correct arcs
	(b) correct region shaded	**1**	
21	**(a)** 73.7 or 73.73 to 73.74	**3**	**M1** for $\frac{20}{3+2}\times2$ or **B1** for $BX = 8$ **M1** for tan [ ] = $\frac{6}{\textit{their}\ 8}$ or better
	(b) **120**	**2**	**M1** for $\frac{1}{2}\times20\times12$ oe
22	**(a) (i)** $\frac{5}{50}$ oe	**1**	
	(ii) $\frac{11}{50}$ oe	**1**	
	(b) $\frac{11}{16}$ oe	**1**	
	(c) $\frac{380}{2450}$ oe	**2**	**M1** for $\frac{20}{50}\times\frac{19}{49}$
	(d) 	**1**	